

PRELIMINARY AMENDMENT
Attorney Docket Q62126

REMARKS

Entry and consideration of this Amendment is respectfully requested.

Respectfully submitted,



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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

Page 4, paragraph beginning at line 11, amend to show as follows:

[figure 3] figures 3a and 3b show[s] and example of pulses generated by the equipment represented on figure 2, and

Page 4, paragraph beginning at line 13, amend to show as follows:

[figures 4 to 8] figures 4a through 4f, figures 5a through 5f, figures 6a through 6f, and figures 7 and 8 are diagrams showing signals at different locations on the receiving side of the equipment represented on figure 2.

IN THE CLAIMS:

The claims are amended as follows:

4. (Amended) A method according to [any of claims 1-3] claim 1, characterized in that each generated pulse is provided with a given amplification (48) or attenuation and the received pulses are provided with the corresponding attenuation (50) or amplification.

5. (Amended) A method according to [any of the previous claims] claim 1, characterized in that the signals received are [submitted] subjected to a synchronous averaging (52).

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6. (Amended) A method according to [any of the previous claims] claim 1, characterized in that the received signals are [submitted] subjected to a matched filtering (54).
7. (Amended) A method according to [any of the previous claims] claim 1, characterized in that the received signals are [submitted] subjected, at least for the medium and high frequency pulses, to a noise suppressing step (56) comprising the estimation of the noise for the part of the received signal after the channel end echo and the determination of a threshold above which the signals are taken into consideration.
8. (Amended) A method according to [any of the previous claims] claim 1, characterized in that the received signals are processed in their own frequency bands and added (60) after processing.
10. (Amended) A method according to [any of the previous claims] claim 1, characterized in that the pulses are complex analytical pulses.
11. (Amended) A method according to [any of the previous claims] claim 1, characterized in that the frequency bandwidth and the amplitude of the low frequency pulses (40) are selected according to the channel attenuation and its compliancy in terms of egress.
12. (Amended) A method according to [any of the previous claims] claim 1 characterized in that the pulses are generated sequentially or simultaneously.
13. (Amended) [Application of the] A method according to [any of the previous claims to the determination of] claim 1 wherein at least one of said properties being determined comprises the locations of defects of the channel.

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14. (Amended) [Application of the] A method according to [any of claims 1-12 to the properties of] claim 1 wherein said transmission channel comprises a telephone line between a central office (12) and a subscriber (14), the measurement being made at the central office.

15. (Amended) A method for testing the properties [, such as the attenuation,] of telephone lines comprising copper pairs, [for instance twisted pairs,] between a central office and a subscriber, characterized in that it [makes use of the] comprises using time domain reflectometry to test said properties.

16. (Amended) A method according to claim 15, characterized in that the time domain reflectometry step comprises the steps of generating, at one end of the channel, a plurality of pulses (40, 42, 44) covering different frequency bands, and [of] detecting [the] echoes provided by these pulses at the same end (12) of the line.

17. (Amended) An apparatus for testing the properties [, such as the attenuation,] of telephone lines comprising copper pairs, [for instance twisted pairs,] between a central office and a subscriber, characterized in that it comprises time domain reflectometry [means] test circuit.

18. (Amended) An apparatus according to claim 17, characterized in that [it] said time reflectometry test circuit comprises [means for generating,] a pulse generator generating a plurality of pulses at one end of the line [, a plurality of pulses (40, 42, 44)] covering different frequency bands, and [means for] an echo processor processing the echoes provided by these pulses at the same end (12) of the channel.

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19. (Amended) An apparatus according to claim 18, characterized in that the [means for generating a plurality of pulses covering] different frequency bands are [such that the frequency bands are] overlapping.

20. (Amended) An apparatus according to claim 19, characterized in that [it comprises means for processing] said echo processor processes the reflected pulses such that the frequency spectrum is practically flat after reflection and processing.

21. (Amended) An apparatus according to [any of claims 18-20] claim 18, characterized in that the pulse [generating means comprise for each generated pulse] generator includes, amplification [(48)] or attenuation [means] for each generated pulse and in that [on the received in side, it comprises, for each pulse,] said apparatus includes complementary attenuation [(50)] or amplification [means] for each received pulse.

22. (Amended) An apparatus according to [any of claims 18-21] claim 18, characterized in that it comprises a synchronous [averaging means] averager for the received signals.

23. (Amended) An apparatus according to [any of claims 18-22] claim 18, characterized in that it comprises a matched [filtering means (54)] filter for the received signals.

24. (Amended) An apparatus according to [any of claims 18-23] claim 18, characterized in that it comprises a noise [suppressing means (56)] suppressor for the received signals, [these] the noise [sup-pressing means] including [means for] an estimator estimating the

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noise for [the] part of the received signals after the channel end echo and [means for] threshold circuit determining a threshold above which the signals are taken into consideration.

25. (Amended) An apparatus according to [any of claims 18-24] claim 18, characterized in that it comprises [means for] a processor processing the received signals for each frequency band and [means for] an adder adding the processed signals.

26. (Amended) An apparatus according to claim 25, characterized in that it comprises [means for] a detector detecting the modulus of the received signals and/or the variation with time of the frequency of the received signals.

27. (Amended) An apparatus according to [any of claims 18-26] claim 18, characterized in that it comprises [means for] a receiver receiving complex analytical pulses.

28. (Amended) An apparatus according to [any of claims 18-27] claim 18, characterized in that it comprises [means for] a selector selecting the frequency bandwidth and the amplitude of the low frequency pulses according to the line attenuation and its compliancy in terms of egress.

29. (Amended) An apparatus according to [any of claims 18-28] claim 18 characterized in that [it comprises means for generating] said pulse generator generates the pulses sequentially or simultaneously.